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KÖSTROSOL® for the investment casting industry

General

KÖSTROSOL is a colloidal solution of dispersed SiO_2 particles in water (colloidal silica). The particles are not visible to the naked eye, but are clearly identifiable under an electron microscope.

The colloidal silica is odourless, non-flammable, miscible with water in any ratio and is opaque to milky white in appearance.

Colloidal silica must be protected from frost since otherwise the silicic acid flocculates irreversibly, thus making the colloidal silica useless.

Frost-protected KÖSTROSOL should also be transported and stored in such a way that it is protected from frost. In contrast to *unprotected* colloidal silica this product can be thawed successfully after being affected briefly by frost.

The first two numbers of the nomenclature of KÖSTROSOL products denote the particle size in nm and the last two numbers denote the solid content in percent by mass.

Application

KÖSTROSOL 0830 and KÖSTROSOL 1030 are used as binding agents for various substances such as silicate refractory materials, natural stone and metal pigments.

The main area of application is the precision casting industry where colloidal silica is used with refractory mould materials and additives for the production of immersion compounds, in particular for the primary coating and, if applicable, also for the secondary coating of ceramic moulds and cores.

If colloidal silica is used as a binding agent for immersion compounds, gelling and curing takes place on the mould surfaces. The gelling is caused by the removal of amorphous silicic acid particles from the colloidal colloidal silica solution.

Ceramic moulds are used in precision foundries for the production of precision castings using the dewaxing or Shaw method, using colloidal silica as a binding agent. The dewaxing method is extremely widely used. A wax model is immersed in a suspension consisting of the binding agent solution and fine grain refractory material and coarse fillers are then scattered on to it. After this first coating, which has a major bearing on the surface properties and dimensional accuracy of the later castings, has dried the second and all other coatings are applied.